



# Effects of motivation to use social networking sites on students' media literacy and critical thinking

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## ABSTRACT

Participation in social networking sites offers many potential benefits for university students. Online interaction on these sites provides various opportunities for them to learn and improve self-control, tolerate and respect the viewpoints of others, express emotions in healthy and orderly ways, and think and make decisions critically. These sites also provide them with a virtual space to execute time, form close connections with friends without being spatially restricted and provide space for young people's self-development. However, the number of studies examining university students' social networking sites, media literacy, and critical thinking is very limited in the literature. Therefore, this research examined the effects of motivation to use social networking sites on students' media literacy and critical thinking. The research also examined the relationships between students' motivation for using social networks, media literacy, and critical thinking. The data were collected using three data collection instruments. The participants were 211 university students enrolled at two universities in Bangkok, Thailand. The results showed significant positive correlations between motivation to use social networking sites, and critical thinking, that university students with better performance in information and learning show better performance in critical thinking and reflection skills. The results also showed remarkable positive correlations between motivation for using social networking sites and media literacy, indicating that university students with better performance in information and learning show better performance in multimedia messages and multimedia organization and analysis. In addition, the results also revealed positive correlations between critical thinking and media literacy. The implications are made based on the results obtained from this research.

**Keywords:** social networking sites, motivation, media literacy, critical thinking, information & learning

## INTRODUCTION

Social networking sites such as Facebook, Instagram, LINE, and Twitter have emerged to promote new technologies to provide the best picture of life for the new generation. Social networking sites provide information about fans' popularity, public opinions, current issues, and users' personal information as alternative multimedia content. Young people participating in online interaction could enhance their self-discovery and develop a sense of identity (Cho, 2015). Media literacy is highlighted due to concerns about the emergence of online electronic multimedia. The most frequently cited concern is the negative impact of electronic multimedia on children, teenagers, and even adults. Other concerns include democracy issues, as the effect of electronic multimedia is a preliminary decision on democracy to prompt the building of citizen skills and the promotion of concern for democracy through media literacy (Chou & Wang, 2022). Social networking sites mainly form online communities for groups with similar interests and activities (Cho, 2015).

Such sites are generally spread through friends. Most social networking sites allow users to interact through chatting, emailing, videos, file sharing, blogs, and newsgroups. Social networking websites provide new ways for information exchange and sharing. A social networking website usually has millions of registered users, and using such a service becomes part of users' daily lives.

With the change in communication technology, the constant innovation and change of multimedia in this era of information explosion have become a necessity in the life of modern people; especially the convenience of the Internet and the popularity of social networks are the most convenient channels for information acquisition. The difference is that the content does not reflect the whole truth and is not an objective statement. Multimedia is created through selection and construction. On the other hand, knowledge requires individual absorption and internalization to become personal wisdom. Transferring multimedia information into personal knowledge is the skill that modern audiences need. Social networking sites are a young and rapidly growing networking phenomenon. The rapidly growing number of users leads to different progress and complicated goals, and different social networking sites have different types of users. Social networking sites provide users with online interaction and communication. At the same time, various services appear with specific goals and use, where the presentation of personal information is the common model (Khan et al., 2021). Social networking sites allow users to create personal information documents on websites and connect personal information documents with others on social networks to build an explicit personal web. Media literacy gives people the ability to share personal information with others. Multimedia experiences in daily life provide feedback on the experience of sharing on social networks. In such a process of dialog and reflection, media literacy courses are important to inspire students' imagination and possibilities. In order to better understand the current situation and future development trends of social network use and media literacy in students' daily lives as an essential factor of their learning, it is necessary to discuss their understanding of media literacy. To the best of our knowledge, there are no studies in the current literature on the effects of motivation to use social networking sites on students' media literacy and critical thinking. The existing studies have only examined the effects of social networking sites on academic achievement (Abdalla & Qashou, 2020; Iqbal et al., 2021; Samad et al., 2019; Tafesse, 2022) and social well-being (Samad et al., 2019), and student perspectives (Issa et al., 2021). However, the existing studies have not examined the relationships among motivation to use social networking sites, media literacy, and critical thinking. Thus, there is a research gap in the literature to examine the relationships between motivation, media literacy, and critical thinking. For this reason, this study examined the relationships between university students' motivation for using social networks, media literacy, and critical thinking, with the expectation that college students will learn to tolerate and respect the viewpoints of others, express emotions in healthy and regulated ways, and engage in critical thinking and decision making.

## LITERATURE REVIEW

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### Motivation for Using Social Networking Sites

Social networking sites are called "virtual social sites," and websites that offer "social networking services" and online communities set up for groups with similar interests and activities. Such services are based on the Internet and provide users with various interaction channels to connect and share, such as email and instant messaging. Such websites are generally distributed through friends (Chen et al., 2021). People can connect and interact with people in different regions through the Internet and maintain current interpersonal relationships. Social networking sites are the social phenomenon of groups with common interests interacting, communicating, and sharing information through the Internet. It could be a group of people with a public internet discussion that becomes an interpersonal relationship network (Dash & Paul, 2021). Regarding the basic concept of "usage motivation and satisfaction," Grohskopf et al. (2020) pointed out that an individual with social or psychological needs sets expectations for public multimedia or other sources to induce various types of multimedia exposure or participation in other activities in order to appear satisfied. The satisfaction sought and the distinct multimedia cognition would lead an individual to actively select different multimedia (Khan et al., 2021). In recent research, Iqbal et al. (2021) examined the effects of emotional intelligence and academic social networking sites on academic performance during the COVID-19 pandemic. Their results show that emotional intelligence, i.e., self-regulation and self-awareness, significantly

affects academic performance. Their results show that motivation also positively correlates significantly with academic social networking sites.

## Media Literacy

Media literacy can be briefly defined as *"the ability to access, analyze, evaluate, and produce media content."* (Park, 2012, p. 89). Media literacy requires that individuals have various skills related to media-related issues and topics. These skills can be built, as follows:

- (i) accessibility to search, find, and filter relevant content in the media,
- (ii) message comprehension to understand different messages in the media, and
- (iii) user participation and production to form and shape opinions and ideas and turn them into digital content (Park, 2012).

Choi et al. (2020) pointed out that media literacy enables people to be "critical thinkers" and "creative producers" of messages in images, speech, and sound. Media literacy is the basic competence of a modern citizen who should understand the different types and signs of multimedia (Adnan et al., 2020) and have the ability to receive messages purposefully, such as identifying information, understanding message elements, evaluating messages, responding to a message, and recognizing the effect of multimedia (Chen et al., 2021). In a recent study, Hayes (2021) suggested the level of cognition as mental processing and thinking; people with better literacy skills would go beyond surface information and pay attention to the depth of the content. Similarly, Ge et al. (2021) stated that media literacy could use, analyze and evaluate multimedia messages and produce multimedia messages to achieve communication ability. Mohd Dzin and Lay (2021) believe that such choice can be transformed into greater power so that when an individual is exposed to multimedia messages, showed larger freedom and reflection on personal beliefs and behavior (Hernández-García & Giménez-Júlvez, 2021).

## Critical Thinking

Researchers suggest that social networks provide educational benefits to adolescents and young adults by enhancing their learning (Mitchell & Ybarra, 2009), developing critical thinking skills (Mitchell & Ybarra, 2009), and developing critical inquiry (Jong & Drummond, 2016). For example, Ali and Qazi (2018) found that critical thinking is positively and highly significantly related to the use of social networking sites suitable for formal learning for academic purposes. In another research, Cheng et al. (2022) considered that critical thinking is not only critical thinking but also affection, i.e., the intention to think critically. The intention to think critically refers to individual thinking habits and tendencies, i.e., how individuals deal with thinking styles in certain situations or under certain conditions. Nanath et al. (2022) consider critical thinking as preparation and foundation for critical thinking without the intention to think critically, no effective thinking would precede it. Skoric et al. (2020) considered critical thinking intention as the spirit of critical thinking and the attitude of a thinker (Lavertu et al., 2021). Shah et al. (2021) considered critical thinking as a type that involves judging according to correct and appropriate evidence, drawing careful conclusions, excluding superstition and authority, accepting causal relationships, and correcting cognition by acquiring new evidence. According to Lyu and Luli (2021), critical thinking is not simply the questioning and judging mind but mainly the multi-faceted discussion of issues and consideration of various solutions. Such a productive, emotional, and rational process was stimulated by life's positive and negative sides and was a constructive and integrated activity that functioned in an open system (Brailovskaia et al., 2020). Researchers have also attempted to examine the relationship between the Internet use and academic performance among college students (e. g., Adenubi et al., 2013; Kalra & Manani, 2013; Sharma, 2015). For example, a study by Chowdhury et al. (2020) examined the relationship between the Internet use for study and non-study purposes and the academic performance of university students. Their results showed a positive correlation between average study time and academic performance. They also found a positive correlation between time spent on the Internet for study and cumulative grade point average and a negative correlation between time spent on the Internet for non-study purposes and cumulative grade point average. Marker et al. (2018) conducted a meta-analysis to examine whether social networking site use impacts academic performance. They found a positive relationship between school-related social networking sites and academic achievement. However, they found that using social networking sites was significant, but this relationship was weakly associated with poorer academic

achievement. They concluded that the more active students were in school-related social networks, the better their grades were.

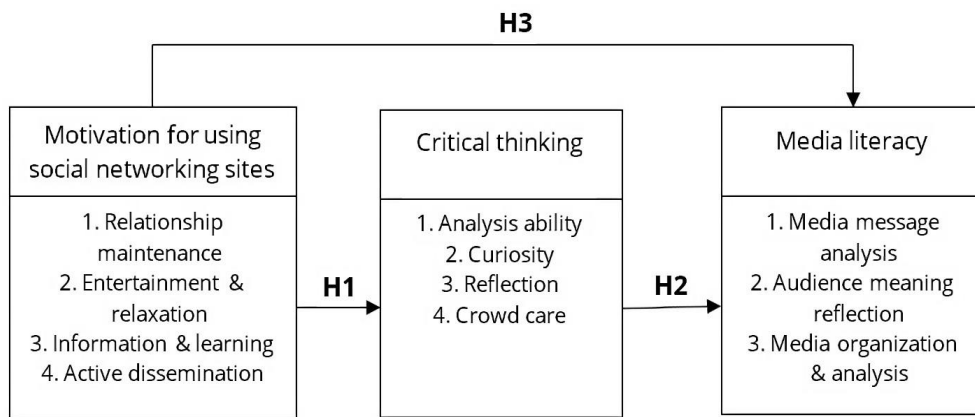
### Research Hypothesis

Multimedia content often involves the motivation of an enterprise to make profits, the nature of ownership, and market power. So multimedia is the channel to receive and deliver a message, but the presentation of different multimedia content would change with corporate considerations (Chou & Wang, 2022). Moreover, the production process and presentation of multimedia, the differences in structure and performance characteristics are not only related to the grammar or rules of multimedia. Instead, they are indirectly influenced by their culture and social background. However, whether the multimedia presentation matches the conveyed intention when multimedia producers produce multimedia depends on the audience. Audiences do not passively receive the message without power and knowledge but can judge the actual message through their active processing (Bonnevie et al., 2020). For this reason, individuals need to improve their ability to appreciate multimedia content, understand the benefit and power relationship behind multimedia and the reason for presenting such message content, clearly respond to the consciousness and subconsciousness of the multimedia message, and understand the effect of such multimedia to break the multimedia myth (Tien et al., 2021). Media literacy refers to an individual's ability to interpret and apply various multimedia media, including broadcasting, audiovisual or print media, electronic communication networks, and computer multimedia, especially news on the broad-based internet (Wang et al., 2020). Researchers have claimed in recent years that media literacy is individuals' positive attitude and outlook to engage with and actively interpret the multimedia message encountered (Share, 2022). It involved helping individuals think critically about the essence of public multimedia, the technology used and the implications, and the multimedia content to create additional personal texts (Murakami & Chakraborty, 2022). Accordingly, media literacy establishes relationships among the following three elements under historical and cultural conditions (Yang et al., 2021):

- (1) The symbolic and material representation of knowledge, culture, and values, i.e., the text.
- (2) The interpretive ability and ability of all people.
- (3) An institution, especially the national government with power, that transmits the skill to acquire and apply knowledge to literature.

Media literacy is the prerequisite for industrial production, and the reproduction of media literacy requires the intervention of large national machines to disseminate media literacy in the right way, with the right content, and at the right level to promote industrialization (Nguyen et al., 2022). With the advancement of technology characterized by computers and multimedia technologies, students should acquire the skills necessary to develop today's and tomorrow's lives.

Cheo et al. (2020) considered it as an individual positive attitude viewed through the contact and active interpretation of the multimedia message encountered. The core was to help the individual to advance critical thinking aimed at the essence of public multimedia; the technology applied, and the effect and multimedia content to further create personal texts. Wang (2020) found a relationship between university students' interpersonal relationships and personal characteristics, family background, and part-time work experience. Online multimedia could improve media literacy through interpersonal interaction. The results demonstrated that university students with more friends on social networks showed higher judgment on advertising and news multimedia, influencing the importance of new media literacy. In a recent study, Yuan and Deng (2021) pointed out that understanding life information is the primary motivation of university students in online multimedia. In their study, university students showed good self-assessment of media literacy and news literacy. In contrast, the action power in media application was low and had a clear idea of producing new news. Male university students scored higher on media literacy than female college students, possibly because males placed more emphasis on rationality while females focused more on emotion. In another recent study, Yang and Wang (2021) indicated that most university students exhibited positive internet behaviors, although interpersonal breadth seemed to differ significantly in email use. Considering interpersonal relationships on the Internet as an extension of real-life interpersonal relationships, dissatisfaction with real-life interpersonal relationships would be replaced by interpersonal relationships on



**Figure 1.** Conceptual framework of research (Source: Authors)

the Internet. In browsing multimedia, an individual could precede critical thinking about the essence of public multimedia, applied technology and impact, and multimedia content to create personal texts further.

The following hypotheses are therefore proposed in this study.

- H1.** Social network motivation correlates significantly positively with critical thinking.
- H2.** Critical thinking shows remarkably positive correlations with media literacy.
- H3.** Motivation for social networking sites shows remarkably positive correlations with media literacy.

## METHOD

### Conceptual Framework

The conceptual framework for this study is presented in **Figure 1** to examine and discuss the relationships between motivation for using social networking sites, critical thinking, and media literacy.

### Operational definition

**Motivation for using social networking sites:** Referring to Gulnar et al. (2010), the motivation for using social networking sites is that this study contains four dimensions: relationship maintenance, entertainment & relaxation, information & learning, and active dissemination.

1. *Relationship maintenance:* Social networking sites allow people closely connecting with friends without being restricted to space.
2. *Entertainment & relaxation:* Social networking sites provide virtual space for killing time.
3. *Information & learning:* Social networking sites are the place to broaden horizons and acquire new knowledge.
4. *Active dissemination:* Users with a strong sense of mission expect to deliver critical information, promote movement through the dissemination in discussion groups, or intensely discuss some issues with members.

**Critical thinking:** Referring to Watson and Glaser (1980), critical thinking in this study includes four dimensions of analysis ability, curiosity, reflection, and crowd care.

1. *Analysis ability:* Analysis ability refers to a thinker continuously applying reasoning and analysis to acquire a conclusion.
2. *Curiosity:* Curiosity refers to a thinker willing to seek answers about new affairs.
3. *Reflection:* Reflection refers to a thinker, according to evidence, inducing a conclusion for evaluation and correction.
4. *Crowd care:* Crowd care refers to a person presenting concern and interests regarding the relevance of proposing assistance and interference.

**Media literacy:** Referring to Shepherd (1993), media literacy in this study covers three dimensions of multimedia message analysis, audience meaning reflection, and multimedia organization & analysis.

1. *Multimedia message analysis:* The audience can identify the stereotypes of age, gender, race, occupation, stage, and sexual orientation, as well as the relationship among power class in multimedia content.
2. *Audience meaning reflection:* The audience can reflect on individual multimedia behavior and consciously use multimedia but is not controlled by multimedia. To understand the essence of the meaning of negotiation between individuals and text.
3. *Multimedia organization & analysis:* The audience can analyze multimedia organization to understand that multimedia message is packaged, decorated, and tailored product.

## Participants

The participants in the study were university students in Thailand enrolled at two universities, Krirk University and Shinawatra University in Bangkok. Of the participants, 57.3% were male, and 42.7% were female. Among the participants, 48 (22.7%) were first-year students, 50 (23.6%) were sophomores, 52 (24.6%) were juniors, and 61 (28.9%) were seniors. Of the participants, 51 (24.1%) were from northern Thailand, 46 (21.8%) were from central Thailand, 56 (26.5%) were from northeastern Thailand, and 58 (27.4%) were from southern Thailand.

## Data Collection Instruments

The researchers developed items based on the relevant literature to measure the motivation variable. In developing the items, the researchers considered Gulnar et al.'s (2010) operational definition of motivation to use social networking sites, which included relationships among maintenance, entertainment and relaxation, information and learning, and active sharing. 20 items were developed by the researchers and used for data collection. In order to calculate the reliability of the questionnaire, Cronbach's alpha analysis was conducted. The internal consistency reliability of the questionnaire was found to be very high. The coefficient alpha was 0.84. This value indicates that the items used to measure motivation are reliable.

The researchers considered Watson and Glaser's (1980) operational definition of critical thinking, including skills to analyze, curiosity, reflection, and concern for quantity. A total of 21 items were developed for critical thinking. The researchers developed the items based on this definition and studies in the relevant literature. Coefficient alpha of 0.86 was determined for these items.

The researchers considered Shepherd's (1993) definition of media literacy, and the items were developed based on this research and the relevant literature. Shepherd's (1993) definition includes analysis of media messages, reflection on audience meaning, and analysis of media organization. 19 items were developed and used to measure media literacy. The coefficient alpha for the media literacy items was determined to be 0.85.

The researchers performed a factor analysis to determine the factor structures of the developed instrument. The results regarding the factor analysis are given in the results. The items and factor names of the instruments are given in [Appendix A](#).

## Procedure

Data collection instruments were given to participants during their course time. For administration, researchers obtained the necessary permissions from the universities, where the research was conducted and completed the ethical procedures. The university students were asked to answer the data collection instruments in this study. The participants agreed to participate in the study. The data collection instruments were administered to the participants in May and August 2022. Two hundred eighty copies of the scales were distributed to the participants, and 211 valid copies were retrieved after removing invalid and incomplete copies. The response rate was 75.0%. The researchers informed the participants to maintain the confidentiality of the respondents strictly. Nevertheless, some respondents left the questionnaires blank or completed the questionnaire with the same items. The researchers gave special attention to encouraging the participants to respond to the items. The respondents had free time to answer the items in the data collection instruments.



**Table 1.** Results of factor analysis

Variable	Factors	Eigenvalue	$\alpha$	CVE
Motivation for using SNS	Relationship maintenance	2.795	0.86	72.693
	Entertainment & relaxation	2.162	0.85	
	Information & learning	1.874	0.83	
	Active dissemination	1.563	0.81	
Critical thinking	Analysis ability	3.182	0.84	75.419
	Curiosity	2.273	0.87	
	Reflection	2.014	0.85	
	Crowd care	1.697	0.86	
Media literacy	Multimedia message analysis	3.357	0.88	78.237
	Audience meaning reflection	2.596	0.84	
	Multimedia organization & analysis	2.340	0.82	

Note. SNS: Social networking sites & CVE: Cumulative variance explained

**Table 2.** Correlation analysis

Dimension	$\alpha$	Motivation for SNS	Critical thinking	Media literacy
Motivation for using SNS	0.84			
Critical thinking	0.86	0.28**		
Media literacy	0.85	0.24**	0.31**	

Note: SNS: Social networking sites & \*\*p<0.01

## RESULTS

### Factor Analysis

The factor analysis results of this study are shown in **Table 1**. The motivation for using the social networking site scale, through factor analysis, is extracted four factors of “relationship maintenance” (eigenvalue=2.795,  $\alpha$ =0.86), “entertainment & relaxation” (eigenvalue=2.162,  $\alpha$ =0.85), “information & learning” (eigenvalue=1.874,  $\alpha$ =0.83), and “active dissemination” (eigenvalue=1.563,  $\alpha$ =0.81). The cumulative covariance explained achieves 72.7%. The critical thinking scale, through factor analysis, extracted four factors of “analysis ability” (eigenvalue=3.182,  $\alpha$ =0.84), “curiosity” (eigenvalue=2.273,  $\alpha$ =0.87), “reflection” (eigenvalue=2.014,  $\alpha$ =0.85), and “crowd care” (eigenvalue=1.697,  $\alpha$ =0.86). The cumulative covariance explained reaches 75.4%. Through factor analysis, the media literacy scale obtained three factors “multimedia message analysis” (eigenvalue=3.357,  $\alpha$ =0.88), “audience meaning reflection” (eigenvalue=2.596,  $\alpha$ =0.84), and “multimedia organization & analysis” (eigenvalue=2.340,  $\alpha$ =0.82). The cumulative covariance explained achieves 78.2%.

### Correlation Analysis

In **Table 2**, motivation for using social networking sites, critical thinking, and media literacy show remarkable correlations among each other. This finding means that the results support **H1**, **H2**, and **H3**.

### LISREL Model Evaluation Index

LISREL (linear structural relation) model combines factor analysis and path analysis in research statistics. It also adds equations in econometrics that could simultaneously calculate multiple factors and causal paths. The evaluation of model fit could be done from preliminary fit criteria, overall model fit, and fit of the internal structure of the model. The research data are organized as below. The preliminary fit criteria, internal fit, and overall fit of the model are further explained.

The complete model analysis results in **Table 3** show that four dimensions of motivation for using social networking sites (relationship maintenance, entertainment & relaxation, information & learning, and active dissemination) could notably explain the motivation for using social networking sites ( $t > 1.96$ ,  $p < 0.05$ ), four dimensions of critical thinking (analysis ability, curiosity, reflection, and crowd care) could significantly explain critical thinking ( $t > 1.96$ ,  $p < 0.05$ ), and three dimensions of media literacy (multimedia message analysis, audience meaning reflection, and multimedia organization & analysis) could remarkably explain media literacy ( $t > 1.96$ ,  $p < 0.05$ ). The overall model presents good preliminary fit criteria.

**Table 3.** Overall linear structural model analysis result

Evaluation item	Parameter/evaluation standard		Result	
Preliminary fit	Motivation for using social networking sites	Relationship maintenance	0.723**	
		Entertainment & relaxation	0.741**	
		Information & learning	0.715**	
		Active dissemination	0.722**	
		Critical thinking	Analysis ability	0.738**
			Curiosity	0.742**
			Reflection	0.706**
			Crowd care	0.728**
		Media literacy	Multimedia message analysis	0.751**
			Audience meaning reflection	0.769**
			Multimedia organization & analysis	0.747**

Note: \*\*p<0.01

**Table 4.** Overall linear structural model analysis result

Evaluation item	Parameter/evaluation standard	Result
Internal fit	Motivation for using social networking sites→critical thinking	0.281**
	Critical thinking→media literacy	0.312**
	Motivation for using social networking sites→media literacy	0.240**

Note: \*\*p<0.01

**Table 5.** Overall linear structural model analysis result

Overall fit	X <sup>2</sup> /df	1.697
	GFI	0.969
	AGFI	0.934
	RMR	0.004

In terms of internal fit, **Table 4** shows positive and notable correlations between motivation for using social networking sites and critical thinking (0.378, p<0.01), positive and significant correlations between critical thinking and media literacy (0.441, p<0.01), as well as positive and remarkable correlations between motivation for using social networking sites and media literacy (0.406, p<0.01). According to these results, **H1**, **H2**, and **H3** are supported.

Regarding overall model fit, in **Table 5**, the overall model fit standards  $\chi^2/df=1.697$ , smaller than standard three, and RMR=0.004 reveal proper results of  $\chi^2/dF$  and RMR. Furthermore, chi-square is sensitive to a sample size unsuitable for directly judging the fit. The overall model fit standards GFI=0.969, and AGFI=0.934 achieve the above 0.9 (the closer GFI and AGFI to one revealing the better model fit). This model, therefore, presents good fit indices.

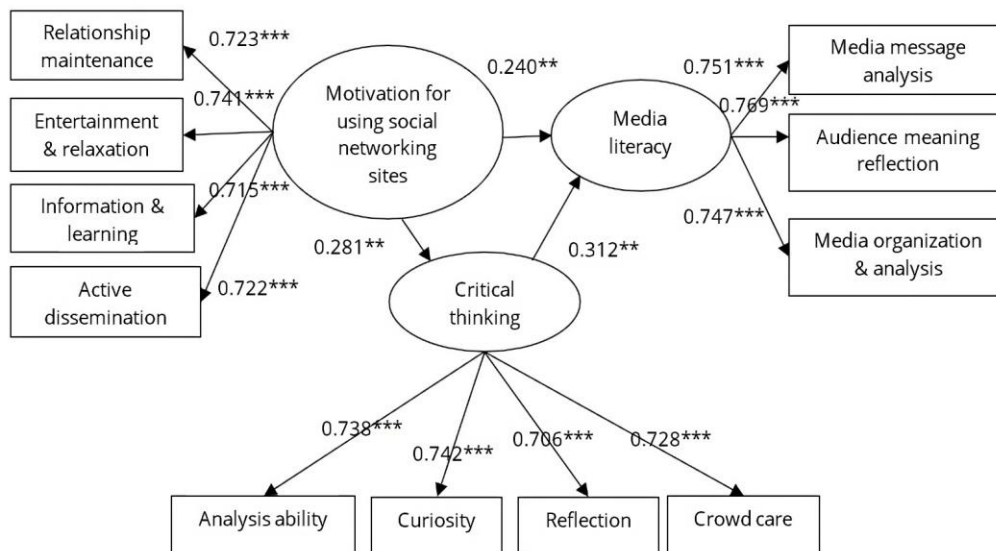
### Theoretical model discussion

**Figure 2** is the overall presentation of the research results. The path coefficient reaching the significance is marked with a solid line, while the path coefficient not reaching the significance is marked with a dotted line. The path coefficients of all variables achieve significance, showing convergent validity and matching the basic requirement for the analysis model. The model fit is verified that this research model conforms to the theory and presents validity.

## DISCUSSION

This research examined the effects of motivation to use social networking sites on students' media literacy and critical thinking. The research also examined the relationships between students' motivation for using social networks, media literacy, and critical thinking. The data were collected using three data collection instruments. The participants were 211 university students enrolled at two public research universities in Thailand. The results showed significant positive correlations between motivation to use social networking sites, and critical thinking, that university students with better performance in information and learning show better performance in critical thinking and reflection skills. The results also showed remarkable positive correlations between motivation for using social networking sites and media literacy, indicating that university





**Figure 2.** Path diagram (Source: Authors, based on research data)

students with better performance in information and learning show better performance in multimedia messages and multimedia organization and analysis. In addition, the results also revealed positive correlations between critical thinking and media literacy.

Motivation to use social networks correlated significantly positively with critical thinking. University students with better performance in information and learning showed good performance in critical thinking and reflection skills. The results showed that university students with better motivation to use social networking sites showed better reflective skills. This result means that university students with better information and learning motivation for social networking sites would participate in crowd care. Such a result is consistent with the research findings of Chou and Wang (2022) and Tien et al. (2021). This result is also similar to the findings of Iqbal et al (2021), who reported the significant positive effects of motivation on academic social networking sites. The research results prove that university students' motivation for using social networking sites represents an intermediate identity, reflecting that social networking sites evolve toward diverse information in the face of diverse social environments and provide university students with a choice of different information sources and different life experiences.

University students demonstrated a remarkably positive correlation between motivation to use social networks and media literacy. University students with better performance in information and learning showed better performance in multimedia news, organization, and analysis. This result addresses that university students who perceive better motivation for social networking sites also seem to have better media literacy. The results reveal that students with better-perceived media literacy are better motivated to use social networking sites. This result shows that students' high attitudes toward information and learning may improve media literacy, which would benefit the quality of information and learning. Such a result is consistent with the research findings of Wang et al. (2020) and Yang et al. (2021). Media literacy means that students can acquire various multimedia messages to use, analyze, evaluate, and create a multimedia message to communicate. Nevertheless, media literacy is not innate. The knowledge and ability to recognize and understand the positive and negative effects of public multimedia content on individuals can be cultivated through the stimulation of critical education to become healthy citizens who are not unduly influenced by multimedia. In this case, university students' overall performance in media literacy would present an intermediate identity.

Critical thinking correlates extremely positively with media literacy. University students with better performance in analytical skills show a better reflection of audience meaning. The results demonstrate that university students with better perceptions of critical thinking also seem to have better media literacy. In particular, students with better-perceived media literacy demonstrate better critical thinking. The reason for such a result may be that students with good analytical skills are not as prone to impulsive purchases based on the enticement of multimedia advertising and can better decide which programs or movies to watch.

Similarly, university students with good performance reflecting on audience meaning show better critical thinking skills. The result is consistent with the research findings of Wang (2020) and Yang and Wang (2021). University students' critical thinking would actively and skillfully conceptualize messages through observation, experience, reflection, inference, or communication and apply the intelligence training process of analysis, synthesis, or assessment. Critical thinking may be applied to academic research on specific subject knowledge and should be applied to practical life issues and discussion of basic life problems.

## CONCLUSIONS

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This research aimed to examine the effects of motivation to use social networking sites on students' media literacy and critical thinking. Given that no research on understanding the effects of motivation to use social networking sites on students' media literacy and critical thinking exists in the current research literature, the results of this research add new knowledge to the literature. In terms of this information, the results can contribute to the literature. In general, the results demonstrated significant positive correlations between motivation to use social networking sites and critical thinking, motivation, and media literacy, and critical thinking and media literacy. With the use of social networking sites among university students, studying their relationship to students' critical thinking and media literacy has become an important research topic in the literature. These findings highlight the critical role of the relationships between the effects of motivation to use social networking sites on students' media literacy and critical thinking. To our knowledge, the present study is the first to examine the role of motivation to use social networking sites on students' media literacy and critical thinking, as well as the related relationships between these variables, including critical thinking and media literacy. Given the uniqueness of the research, the findings contribute to further exploring the relationships between motivation to use social networking sites and students' media literacy and critical thinking.

### Implications

This study has practical suggestions based on the research results. First, based on the results, most university students would continue to use "active dissemination" for their friends as a motivation for using social networking sites to disseminate news, promote community activities, or intensively discuss topics related to current news. In this case, university administrators and universities should publish information about the school and even set up information platforms for student exchanges so that university students can better understand the school and increase their interaction with the school to achieve the feeling of loving the school and ensure sustainable operation of the school. Second, there is a character education for students to provide critical thinking and media literacy. For this aim, character education should be promoted to enhance the sensitivity of college students to care for the masses and practice character education to promote the school's image to a large extent. In promoting character education, school administrators could encourage each other to improve the character climate or build the environment for character education.

Third, university students' skills in analyzing multimedia messages can increase motivation to use social networks. In this study, students who excel at reflecting on audience meaning in the context of media literacy demonstrated better critical thinking skills. In this case, the universities should support the promotion of library equipment, expand the collection, provide devices for reading in the paper and online, plan and maintain the school library network, and build a library information system to promote students' media literacy and critical thinking. Also, school administrators can encourage students to participate in club activities and create appropriate activity spaces, where students can connect with people to gain life experience and strengthen their critical thinking skills through club training. Similarly, universities could use the dissemination function of social networks to manage school-related issues or activities to achieve active dissemination of students and improve school awareness and reputation.

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## APPENDIX A

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### Items for Motivation to Use Social Networking Sites

#### *Relationship maintenance*

1. Social networking sites allow me to make new friends.
2. Social networking sites allow me to have better interpersonal relationships.
3. Using social networking sites allows me not to feel lonely.
4. Using social networking sites could help me maintain a relationship with others.
5. Using social networking sites allows me closely to combine with family members and friends.

#### *Entertainment & relaxation*

6. Using social networking sites could receive entertainment effects.
7. Using social networking sites could relieve pressure.
8. Using social networking sites could relax me.
9. Using social networking sites could kill time.
10. I enjoy randomly browsing articles on social networking sites.

#### *Information learning*

11. Social networking sites are one of the information sources in my daily life.
12. I can learn new knowledge and affairs on social networking sites.
13. Social networking sites provide various opinions or ideas for specific topics.
14. Social networking sites allow me to acquire new knowledge from others' boards.
15. I can find out novel pictures and films on social networking sites.

#### *Active spread*

16. Social networking sites provide opportunities for deeply discussing relevant issues.
17. I could promote social movement through social networking sites.
18. People could have deeper cognition of some issues through social networking sites.
19. I could promote and inform messages through social networking sites.
20. I enjoy reproducing meaningful and valuable articles or pictures on social networking sites.

### Items for Critical Thinking

#### *Analysis ability*

1. When I encounter complicated problems, I try to keep my rational and logical thinking abilities.
2. Before using a message, I would think of the reliability of the message.
3. I try to inspect and prove the value and reliability of new points of view.
4. I try to clearly define problems before dealing with the problems.
5. I try to keep the latest and complete message before solving problems.
6. I could rapidly understand others' feelings and ideas from discussions or observations.

#### *Curiosity*

7. I would try to think of a question from different angles.
8. I would try to think with new points of view or concepts.
9. I would further explore novel affairs or points of view.
10. I enjoy finding out repeated models in people, affairs, and objects.



### **Reflection**

11. I would take factors in situations into account when making decisions.
12. I would decide the persuasion of my points of view through self-questioning.
13. I try to find out the implied ideas in others' arguments.
14. I try to predict the results of all workarounds before making decisions.
15. I realize that my growth might affect my objectivity.
16. I would do more study on what I am not certain to understand more.

### **Crowd care**

17. I would care about humans and the earth in which we live.
18. I could understand social norms and values and accept individual differences.
19. I could respect human dignity and care or be compassionate for others.
20. I could face conflict with the principle of "mutual benefits".
21. I could develop humanitarianism and care about disadvantaged groups.

### **Items for Media Literacy**

#### **Media message analysis**

1. "Typhoon Dujan, known as the fiercest one ever, brings wind and heavy rain to result in the waterlogged zone of the whole village; starving people fill the land and feel miserable." I consider such statements being personal opinions rather than news reports.
2. I consider that different media types or programs would result in people's distinct opinions about the same event.
3. I consider that news reports more or less contain ideology, value, and the intention of promotion.
4. I think that the media message is not completely true.
5. I can clearly identify real news and advertising news on news reports.
6. I could clearly know the party color of the media.
7. I think that some news reports present placement marketing.

#### **Reflection of audience meaning**

8. I consider that the content quality of programs with top viewership and magazines with the best circulation is not necessarily the best.
9. I could make my own decision to watch programs or movies without being affected by friends or family members.
10. I would correctly interpret the meaning of news events and eliminate unimportant or uncertain information.
11. I would evenly apply media and other daily activities to arrange distinct leisure rather than blindly binge-watching trendy dramas properly.
12. I would check media messages.
13. I could identify whether the media try to persuade people with unreal tricks.

#### **Analysis of media organization**

14. I would compare message content announced by different media organizations.
15. I think the program production and play time of business media are interfered with by interest groups.
16. I think that public television is the government-built public media, but I would criticize the government's governance.

17. I think that the political view of commercial sponsors or media organizations would affect the announcement of news content.
18. I think the selection and presentation of media messages are interfered with, modified, and tailored by many artificial factors.
19. Media owned by different party financial groups present distinct interpretations of the same political report.

